UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8960

February 22, 2008

Colonel John E. Pulliam, Jr.
District Engineer
Wilmington District, U. S. Army Corps of Engineers
Post Office Box 1890
Wilmington, NC 28402

SUBJECT: North Topsail Beach Shoreline Protection Project, North Topsail Beach, North Carolina - Draft Environmental Impact Statement
CEQ # 20070538; ERP # COE-E30043-NC

Dear Colonel Pulliam:

Pursuant to Section 309 of the Clean Air Act (CAA) and Section 102(2)(C) of the National Environmental Policy Act (NEPA), the U.S. Environmental Protection Agency (EPA) Region 4 has reviewed the Draft Environmental Impact Statement (Draft EIS) issued by the U.S. Army Corps of Engineers (Corps) for the subject project. Under Section 309 of the CAA, EPA is responsible for reviewing and commenting on major federal actions significantly affecting the quality of the human environment.

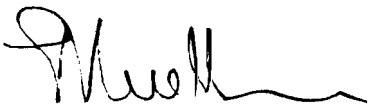
A total of 7 build and no-build alternatives are addressed to varying degrees in the Draft EIS. The Town of North Topsail has proposed to the Corps a beach nourishment project that would involve a total of 6.55 million cubic yards of sand to be dredged from an offshore borrow area, and 635,800 cubic yards from a proposed New River Inlet channel reconfiguration. The Town's preferred Alternative 3 would place fill along 11.1 miles of shoreline, accomplished in phases over 9 years, and would require a Clean Water Act Section 404 permit. Additional sand dredging and fill actions would reoccur to maintain the beach beyond the 9 years and would require additional permits for some extended period. The Town is seeking both State and Federal permits but the available permitting options, if any, are not addressed in the document.

EPA rates all build alternatives EC-2, meaning that we have identified environmental concerns necessary to be resolved, and there is need for additional information and clarification in the final EIS. EPA found the document difficult to review, with discussions of impacts scattered in other than the "Environmental Consequences" section; and there are conflicting statements regarding proposed frequencies of dredging the inlet and the offshore borrow site. Additional consideration of cumulative adverse impacts should occur, and clarification of the "as built" beach and subaqueous nearshore bottom contours. Clearer explanation with diagrams of the beach fill material relative to the location of the extensive hardbottom habitat should be provided in the final EIS. Further definition of EPA's rating can be found in the second enclosure of this letter.

From an overall perspective, the situation at North Topsail Beach is not unique; many barrier islands face accelerated rates of erosion. This Draft EIS discounts the increasing difficulties of dealing with barrier island development and the burdensome costs and difficulties to fend off ocean advances. More damaging storms are predicted along with the rise in sea level. We therefore suggest additional consideration of the two no-build alternatives. Of the build alternatives, EPA favors Alternative 4 that would undertake the beach nourishment with the fill hydraulically dredged from only the proposed offshore borrow site. EPA considers the long term adverse impacts of deepening New River Inlet unjustified because there is no navigational purpose identified in the document. The potential adverse impacts to migratory fish and invertebrates by the inlet repositioning, deepening, and additional dredging every four years (or probably more frequently), are not fully documented, and could have substantial negative ramifications to the overall fishery. The proposed relocation of the channel is contrary to the natural trends in coastal processes over time to orient the channel as it presently exists. Given that the net sand transport historically has been southerly, EPA would suggest that the best way to naturally replenish North Topsail Beach is to minimize interruption of long-shore sand dynamics. Digging a much deeper and wider channel as proposed with Alternative 3 is likely to become a sand conduit seaward. The Corps has extensive expertise and experience with coastal erosion and should be addressing the broader navigational needs and shoreline trends by devising a management plan for the entire Wilmington to Cape Lookout coastline.

Thank you for the opportunity to review and comment on this draft EIS. If you wish to discuss EPA's comments, please contact me at 404/562-9611 (mueller.heinz@epa.gov) or Ted Bisterfeld of my staff at 404/562-9621 (bisterfeld.ted@epa.gov)

Sincerely,



Heinz J. Mueller, Chief
NEPA Program Office
Office of Policy and Management

Enclosures: Detailed Comments on the draft EIS
EPA Rating System Description

cc: Miles Croom, NMFS, St. Petersburg
Pete Campbell, USFWS, Raleigh Field Office

DETAILED EPA COMMENTS

Alternatives

Beginning on page 33, the Town's preferred Alternative 3 is described as a five-phased action over a 9 year construction period. There is reference, here, to a "recovery period" estimated to be 15 years for the preferred alternative to restore the shoreline to a baseline location and beach size. However, the Draft EIS does not present any logical way that this baseline was established previously. Barrier island beaches have been shifting continually so it is uncertain whether a baseline location and contour of the shoreline should be defined. EPA contends that there never has been any static baseline location because the barrier island beach configuration changes constantly. Further, the term "recovery period" would normally refer to environmental condition which is not the case here with recurrent deposition of more sand onto the beach.

Table 5 on page 3 indicates that a total of approximately 3.22 million cubic yards (mcy) of fill material is required for all 5 phases of Alternative 3, but the text on previous pages states a quantity of 7.19 mcy would be needed. Different fill volumes are mentioned for the same alternative and the volumes vary between alternatives with the same borrow site without appropriate clarification.

The realignment of the New River Inlet channel should consider whether this repositioned, channel with a depth of 18 feet and width of 500 feet would be more efficient to maintain and more stable than the present alignment. EPA contends that unless there is a great deal of certainty of this being more efficient and less costly for the maintenance of navigation requirements in the long term, it should not be contemplated. A more north-south channel orientation proposed and is said to be consistent with old baseline conditions. However, where the expected effects of a one time dredging and relocated channel for Alternative 5 are discussed on page 167, it is revealed that this alignment is not expected to be more self-maintaining and would possibly need more frequent dredging. Inlet configuration is predicted to revert to the present alignment over some (unspecified) time period. It would seem that the engineering difficulties and costs could escalate along with environmental impacts, without any long-term navigation benefits.

Seven alternatives are considered in the DEIS including No Action. Because of the lengthy duration of the activities, it is unclear whether the Corps has latitude in its authorizations or permitting of the project. EPA is concerned that this is an all or nothing approval of the project rather than a provision for interim mid-course review at an appropriate juncture.

The No Action Alternative and the Buy-Out/Relocation Alternative involve no dredging and filling other than for the normal channel maintenance. The financial impacts to the Town from the loss of tax revenue and the value of the habitation of beachfront structures are presented. These alternatives have not been developed in any

degree of detail nor assessed relative to the ultimate alternative uses of the abandoned property restored to its natural state, and the absence of the municipal infrastructure expenses needed to support the residential properties.

Other than four alternatives that would require different borrow and placement of fill, Alternative 7 is the construction of a terminal groin on the north end of North Topsail. This alternative was discarded because it is inconsistent with the State's coastal policies. Unfortunately, the Corps did not consider other more innovative structural options that might be found suitable. These might include temporary subaqueous structures or wave baffles to modify the hydrodynamics and sand movement, or methods to lessen the wave energy at the eroded beach areas. The Draft EIS overall is more of a justification for selecting Alternative 3 rather than a comparative evaluation of a full range of potentially feasible alternatives.

It is noted on page 10 of the document that this project does not focus on improving navigation. EPA infers from this text that the only reason for including inlet reconfiguration (widening and deepening) is for the supply of sand to nourish the North Topsail Beach.

One additional point should be addressed in the EIS that is relevant to all alternatives. The document stresses the point that there are 31 residential structures imminently threatened to be lost to inundation, and 10 more past that point. High dollar values have been assigned to the properties in jeopardy or that have already experienced damage and made uninhabitable by coastal erosion. It may not be legitimate for the Town to assign a tax rate corresponding to those high values and have those values reflected in the EIS when the properties would logically be valued much less presently, because of their vulnerable location and the uncertainty of rescue The effects of sea level rise and the effects of recurring and more severe storm events, the Town is likely to demand more frequent and aggressive beach filling. It is unclear whether repetitive emergencies have been factored into the long-term cost estimates.

Affected Environment

Discussion of the geology of the barrier islands and nearshore bottoms is found in Section 4.1.1. Onslow Beach is to the northeast and it experiences localized erosion rates as much as 26 feet/year, which is the most severe erosion documented in the Draft EIS. This could represent a compelling need for Onslow Beach, which is Federal property, to receive priority for remedial action, but the document does not mention any planned or proposed actions.

Reference is made to the report: "Engineering Analysis Shoreline Protection Project" October 2007, prepared by Coastal Planning & Engineering, Inc. The data presented in Figure 36 indicate substantially greater erosion along Onslow Beach. Further, the trend is that of increasing rate of beach loss. EPA suggests investigation of whether remedial action on Onslow Beach would offer a long-term benefit to North Topsail Beach. Onslow appears to provide better habitat quality than does North Topsail.

It is noted on page 66 of the Engineering Analysis that current sea level rise is 0.0125 ft/yr and it results in beach recession of 0.5 ft/yr at North Topsail Beach. This factor has been considered in the calculations for the proposed project but this factor, like others, is not static and the rate of sea level rise is likely to change over time. Please clarify whether this change will be considered in the future. The effect of sea level rise should be prominently addressed in the final EIS.

Surveys of the nearshore area discussed in this section have documented substantial hard bottom outcrops, and landward facing scarps up to 15 feet high. Regardless of how these features came to be exposed, they and the marine life associated with them are a significant attribute to the nearshore marine environment, and worthy of protection. We note the sidescan survey to determine the existence of hard bottom substrate appears to have been limited to approximately 2,000 ft. seaward from shore. Have all possible sand borrow areas been explored? Also, since surveys conducted in 2006 revealed minimal hard bottom located in the southern section of the study area, why is this area not considered for sand borrow sites?

In Section 4.14.3, littoral sand drift and net sand transport are mentioned but data and discussion are presented only in the appended engineering study. Littoral sand transport and wave action are very important physical factors for this project and merit substantial discussion, here and in regard to the efficacy of the alternatives. It is unclear how wave data obtained from a data buoy offshore in 72 feet water depth provides meaningful data for determining littoral zone and near beach sand transport.

Environmental Consequences

Text narrative is quite unclear regarding the placement of fill material. Proximity of the fill relative to the mean low waterline and the landward edge of the hard bottom outcrop is confusing. EPA suggests the inclusion of beach profile figures of before and after filling. Making this particularly confusing is the modeling conducted to predict the movement of deposited fill subsequent to actual placement using the terms of point of intercept (depth of closure) neither of which are explained adequately. It appears, though, that the immediate or result after time would be fill getting to within 800 feet of hardbottom areas, a distance which is far short of the State-mandated 1,640 ft buffer, and this 800 feet setback may not be sufficiently protective of this resource. In Section 6.4.6 of the document, there is a proposal to lessen the hardbottom buffer further to 400 ft, which may be necessary within the northern section inlet area in order to construct the beach as preferred by the Town. This proposal is inappropriate, in EPA's opinion, for consideration as mitigation or minimization. The sediments and other conditions of Florida's nearshore waters, as referenced here, are considerably different and experience there may not be adequate rationale for lessening the hardbottom buffer for this project.

The presence of the defined significant natural heritage area named the New River Inlet Outcrop is shown on Figure 8b but a characterization and explanation of its significance could not be found in the EIS. Other hard bottom areas have been located

but there is no comparison with the designated outcrop. This information should be provided in the final EIS. Further, the potential impacts of project fill deposition to this outcrop should be stated in the final EIS.

It is interesting to note that annual maintenance dredging is done within New River Inlet and its approaches. For an approximate annual average cost of $900,000, the result is marginal MLW navigation depths. Does the Corps know what the controlling depth would be without this maintenance? This annual dredging exacts a toll on the shoaling area infaunal habitat and on transitory estuarine-dependant species foraging in this area.

Table 20 is a compilation of physical effects from the alternatives on North Topsail and Onslow Beaches. This table is extremely misleading and confusing. One example is that the No Action Alternative does not cause loss of intertidal zone rather this zone shifts in position. Also, it is unclear how habitat losses on Onslow Beach can be attributed to an alternative when the alternative does not involve any action on Onslow. The habitat loss is actually the natural erosive effects occurring at this time for the barrier island. Additionally, the table shows two entries for impacts to High Marsh habitat, and the numbers do not agree.

Alternative 5 would conduct the beach nourishment of the central section as the other build alternatives, but would conduct a one-time only dredging relocation of the inlet with fill placed onto the north section of the island. Text on page 195 indicates that this alternative ".....does not meet the Town's intent to avoid and minimize impacts to natural resources." It is unclear why the other beach nourishment alternatives, likewise, were not found incompatible with this objective.

A major concern to EPA is raised on page 196 relative to Alternative 6, which would only realign the inlet channel and place that fill onto the beach. The concern pertains to all dredging alternatives and is a potentially major cumulative impact if infaunal diversity and abundance do not recover between dredging actions. There is no further discussion of the recovery of species, and with the frequency of dredging and re-nourishment so uncertain, we suggest additional focus on this concern in the final EIS, supported by technical references.

Water turbidity and poor visibility by divers surveying nearshore bottom habitats was documented at times to be 0-30cm during 2006. If turbidity data exist for these surveys, it should be presented with the expected concentrations associated with proposed dredging operations and compared to state water quality standards.

Not addressed in the document is the potential shoreline erosion along Cedar Bush Cut resulting from this project. Deepening of the inlet channel could create greater water velocities through this marsh area. Mitigation for possible scouring needs to be considered, and further some possible enhancements to the habitat should be considered for this area.

Our review of the "Environmental Consequences" chapter and specifically Section 5.10 did not reveal any projection of the results, i.e., the indirect impacts of the project on future development. This is a major omission of the Draft EIS. It is likely that the project would result in intensified development and redevelopment within the FEMA high velocity wind and high flood hazard zones, and demand for supporting infrastructure will increase because of the constructed sand barrier. Also, there is no assessment of the impacts to the island segments covered by the Coastal Barrier Resources Act. This assessment should address whether adjacent new development could diminish the natural resource values of these undeveloped segments. While Onslow County's land use planning is mentioned, there is no description of the extent of development within CBRA segments. Based on some aerial photography, much of the CBRA segments currently have structures on them, and EPA assumes more could be built, but without Federal assistance. EPA suggests that the final EIS provide more information about the impact on CBRA segments.

Mitigation, Minimization and Avoidance Measures

The text in Section 6.0 addresses the changes in the recommended project (Alternative 3) These have included altering the scope of the project to lessen adverse environmental effects and an extensive monitoring plan of both the physical results and documentation of biological effects. A concept defined as the equilibrium beach profile (perched beach fill is another term used) is proposed involving steeper beach slopes and sub-aqueous deposition of fill. While these designs are proposed to hopefully retard subsequent loss of sand, this section of the document does not explain how this benefits wildlife. EPA suggests that such deviations from normal slopes may result in adverse impacts to wildlife. A goal of the project is to place larger particle sand in areas to lessen accelerated loss and if possible strive to make the new beach fill as close as possible to the indigenous sand grain composition. Again, the objective of the project is to retard sand loss rather than to maintain established grain size composition. It is unclear how deliberate changes in sand particle size may affect wildlife populations and their use of the beach and littoral zone. The most pronounced concern is inhibiting the nesting of loggerhead turtles and shorebirds especially the piping plover. While this concern is recognized in the document, every possible step should be taken to minimize hindrances to successful nesting. The Fish and Wildlife Service and the National Marine Fisheries Service can provide technical guidance on this concern.

The construction schedule is discussed on page 264 with construction proposed to occur between November 16 and March 31. Considerable interagency effort has resulted in this construction window based on the best data available in order to avoid and minimize impacts to nesting and migration activity. EPA is aware, however, of the recent difficulty experienced by the Corps in contracting other dredging work during winter months due to stormy sea conditions. Regardless, it is important for this timing of dredging and filling to be made a condition of a Section 404 Permit.

Another concern about protected species is potential impact to shore birds particularly the endangered piping plover. It is important for projects like these to have

various environmental enhancement components. There is documented visitation by piping plovers but no recent nesting. Therefore we recommend coordination with the Fish and Wildlife Service and state officials regarding a goal of establishing nesting of this listed species on the project beach.

As stated earlier, this project would have an initial (phased) duration of 15 years. There is proposed additional dredging and filling that would occur periodically for a much longer timeframe. Because of the dynamic nature of this barrier island environment, the impact predictions and need of beach fill have less reliability 15 years or more into the future. It would be appropriate to define a much shorter duration of the Section 404 permit to enable a reevaluation of the performance of the permit holder, and issuance of a new permit and conditions, as appropriate. Also, the extensive monitoring plan proposes pre-construction and post construction documentation of the project. It is unclear whether each separate dredging and filling event would be monitored closely.

There is no description of the borrow site after dredging actions. We recommend adding a post- construction sampling of the borrow site to document the resulting bottom contours, water quality and rate and composition of biological re-colonization. The functional recovery of the sand borrow site is important. Extremely low dissolved oxygen levels can occur as fine particulate organic matter accumulates in depressions on the sea bottom.

The project would have substantial impacts on the coastal resources, and it may have potentially much greater impact in a cumulative sense. There is a very general cumulative impacts assessment appended, but it does not address encouragement of new development or redevelopment resulting from the project, and there is no reference or summary of the assessment within the main text of the Draft EIS. Additionally, if this project is conducted concurrently or in close succession with similar projects between Wilmington and Beaufort, migratory fish and birds could be impacted, and adverse impact to beach nesting species could be greatly magnified. There is no information provided with which to make any assessment of this potential situation. It is within the prerogative of the Corps to avoid and minimize such cumulative impacts via the permit conditions.

U.S. ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL IMPACT STATEMENT (EIS) RATING SYSTEM CRITERIA

EPA has developed a set of criteria for rating Draft EISs. The rating system provides a basis upon which EPA makes recommendations to the lead agency for improving the draft.

RATING THE ENVIRONMENTAL IMPACT OF THE ACTION

- LO (Lack of Objections): The review has not identified any potential environmental impacts requiring substantive changes to the preferred alternative. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposed action.

- EC (Environmental Concerns): The review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact.

- EO (Environmental Objections): The review has identified significant environmental impacts that should be avoided in order to adequately protect the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). The basis for environmental objections can include situations:

    1. Where an action might violate or be inconsistent with achievement or maintenance of a national environmental standard;
    2. Where the Federal agency violates its own substantive environmental requirements that relate to EPA's areas of jurisdiction or expertise;
    3. Where there is a violation of an EPA policy declaration;
    4. Where there are no applicable standards or where applicable standards will not be violated but there is potential for significant environmental degradation that could be corrected by project modification or other feasible alternatives; or
    5. Where proceeding with the proposed action would set a precedent for future actions that collectively could result in significant environmental impacts.

- EU (Environmentally Unsatisfactory): The review has identified adverse environmental impacts that are of sufficient magnitude that EPA believes the proposed action must not proceed as proposed. The basis for an environmentally unsatisfactory determination consists of identification of environmentally objectionable impacts as defined above and one or more of the following conditions:

    1. The potential violation of or inconsistency with a national environmental standard is substantive and/or will occur on a long-term basis;
    2. There are no applicable standards but the severity, duration, or geographical scope of the impacts associated with the proposed action warrant special attention; or
    3. The potential environmental impacts resulting from the proposed action are of national importance because of the threat to national environmental resources or to environmental policies.

RATING THE ADEQUACY OF THE ENVIRONMENTAL IMPACT STATEMENT (EIS)

- 1 (Adequate): The Draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

- 2 (Insufficient Information): The Draft EIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the Draft EIS, which could reduce the environmental impacts of the proposal. The identified additional information, data, analyses, or discussion should be included in the Final EIS.

- 3 (Inadequate): The Draft EIS does not adequately assess the potentially significant environmental impacts of the proposal, or the reviewer has identified new, reasonably available, alternatives, that are outside of the spectrum of alternatives analyzed in the Draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. The identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. This rating indicates EPA's belief that the Draft EIS does not meet the purposes of NEPA and/or the Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised Draft EIS.